

**PATENT**

Attorney Docket No.: 390533

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**REMARKS**

Claims 1 and 16 have been amended to more particularly claim the invention.

Support for the amendments can be found in the specification at least at page 3, lines 24 to 30, and from page 5, line 22 to page 6, line 23. The Detailed Description of Preferred Embodiments has been amended to correct an obvious typographical error, as "such a methanol..." clearly should be "such as methanol..." Applicants respectfully submit that none of the amendments introduce any new matter. Claims 1-16 are currently pending in the application for examination.

**Rejection under 35 U.S.C. §112:**

The rejection of claim 16 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention is respectfully traversed and submitted to be obviated in view of the amendment to claim 16.

The Examiner has rejected claim 16 as indefinite and confusing for the groups (a) through (f) because it is unclear if one of the conditions or all of the conditions are required at the same time. Claim 16 has been amended to add "and" at the end of condition (b), to add "wherein" at the end of condition (c), and to add "or" at the end of condition (e) to make it clear that conditions (a), (b), (c), and one of the conditions among (d), (e) and (f) are required at the same time. Claim 1 has also been amended to add "or" at the end of condition (ii) to be consistent with Claim 16 and to make it clear that one of the conditions among (i), (ii) and (iii) is required.

In view of the foregoing amendment and remarks, reconsideration and withdrawal of the rejection of claim 16 under 35 U.S.C. §112, second paragraph, is respectfully requested.

**Rejections under 35 U.S.C. §103(a):**

The Examiner has rejected claims 1-16 under 35 U.S.C. 103(a) as being unpatentable over Wu et al. (U.S. 5,593,735). The rejection is respectfully traversed and submitted to be in error for the following reasons.

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Wu et al. discloses an acid cured coating composition comprising: a polyfunctional hydroxyl group containing material; an aminoresin crosslinking agent; a carbamate co-crosslinking agent; and a cure catalyst. The aminoresin crosslinking agents used in the curable compositions are partially or fully methyolated, substantially fully etherified amino compounds such as melamine, glycoluril, guanamine, and urea. The carbamate co-crosslinking agent is the essential component to the aminoresin compositions in Wu et al.

The instant application in Claim 1 claims a crosslinker composition consisting essentially of 50 to 95 weight percent monomeric C<sub>1</sub> to C<sub>8</sub> alkoxyethyl melamine derivatives containing not more than about 0.20 wt. % of imino (>N-H) groups; and 5 to 50 weight percent oligomeric C<sub>1</sub> to C<sub>8</sub> alkoxyethyl melamine derivatives, wherein (i) when the composition comprises from 5 to 20 wt. % oligomer, the composition has an imino content of less than 0.20 wt. %; (ii) when the composition comprises from 20 to 30 wt. % oligomer, the composition has an imino content, I, defined by the algorithm, I  $\leq$  0.02X - 0.2, where X is the weight percent oligomer in the composition and I is expressed in weight percent imino; or (iii) when the composition comprises from 30 to 50 wt. % oligomer, the composition has an imino content of less than 0.7 wt. %. Claim 1 is patentable over the teaching in Wu et al. because, by using the "consisting essentially of" language, the composition in Claim 1 does not include a carbamate co-crosslinking agent which is the essential component of the compositions disclosed in Wu et al. The "consisting essentially of" language in Claim 1 excludes a carbamate co-crosslinking agent because the carbamate co-crosslinking agent would materially affect the basic and novel crosslinking properties of the compositions as claimed in Claim 1. As such, Applicants respectfully submit that the compositions of Claim 1 are unobvious and patentable over Wu et al.

Claim 16 claims a composition comprising monomeric and oligomeric alkoxyethylated melamine, wherein monomeric alkoxyethylated melamine molecules have 6 moles of substituent groups attached to pendant nitrogen atoms per mole of monomeric melamine, wherein said substituent groups are selected from the group consisting of imino [>N-H], methyol [>N-CH<sub>2</sub>OH], alkoxyethyl [>N-CH<sub>2</sub>OR] and

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acetal [ $>\text{N}-\text{CH}_2\text{OCH}_2\text{OR}$ ]; wherein difunctional bridging groups between melamine units in oligomeric alkoxyethylated melamine are selected from the group consisting of methylene groups [ $>\text{N}-\text{CH}_2-\text{N}<$ ] and methylene ether [ $>\text{N}-\text{CH}_2\text{OCH}_2-\text{N}<$ ] groups; and wherein monomeric alkoxyethylated melamine units comprise at least 50 and up to 95 percent by weight of the monomeric and oligomeric alkoxyethylated melamine units in the composition as determined by size exclusion chromatography, alkoxyethyl groups comprise at least 5.0 moles of substituent groups attached to pendant nitrogen atoms per mole of monomeric melamine, and the alkoxyethyl groups on each melamine unit are methoxymethyl or mixtures of methoxymethyl and higher alkoxyethyl groups; and (i) when the composition comprises from 5 to 20 wt. % oligomer, the composition has an imino content of less than 0.20 wt. %; (ii) when the composition comprises from 20 to 30 wt. % oligomer, the composition has an imino content, I, defined by the algorithm,  $I \leq 0.02X - 0.2$ , where X is the weight percent oligomer in the composition and I is expressed in weight percent imino; or (iii) when said composition comprises from 30 to 50 wt. % oligomer, the composition has an imino content of less than 0.7 wt. %.

Claims 1 and 16 are also unobvious over the teaching in Wu et al. because they claim alkoxyethylated melamine compositions where the imino content in the composition depends on the oligomer content in the composition, i.e., (i) when the composition comprises from 5 to 20 wt. % oligomer, the composition has an imino content of less than 0.20 wt. %; (ii) when the composition comprises from 20 to 30 wt. % oligomer, the composition has an imino content, I, defined by the algorithm,  $I \leq 0.02X - 0.2$ , where X is the weight percent oligomer in the composition and I is expressed in weight percent imino; or (iii) when said composition comprises from 30 to 50 wt. % oligomer, the composition has an imino content of less than 0.7 wt. %. Fig. 2 shows the claimed relationship between the imino content and the oligomer content. Such requirement is essential for the object of the instant invention to provide improved alkoxyethyl melamine compositions for use as low temperature crosslinkers in the production of flexible, tough coatings having improved solvent resistance.

As shown in Table 3 comparing the compositions of the claimed invention with Comparative Examples 12, 14 and 15, experimental samples with compositions of the

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invention that possess the claimed imino and oligomer content ratios all show unexpectedly high MEK rub numbers (solvent resistance) and Knoop Hardness indexes (hardness). The control sample compositions (comparative examples 12, 14 and 15) which do not possess such required imino and oligomer content ranges show low MEK rub numbers and Knoop Hardness indexes. Applicants respectfully submit that the compositions of the claimed invention possess improved results in low temperature curing coating formulations and are patentable over Wu et al.

It seems the Examiner has taken the position that it would have been obvious to the artisan in the art, given the teachings of Wu et al., "in selecting the combination of monomeric and oligomeric to arrive at the blend of mixture of melamines having not more than 0.20 wt. % imino (>N-H) groups or bonds." Applicants respectfully submit that such statement is incorrect. First, the compositions of Claims 1 and 16 in the instant invention are unobvious and the improved results obtained therewith would not be expected by a person having ordinary skill in the art. Such results are evidence of patentability. In addition, obvious to try is not the standard for 35 U.S.C. §103. *See In re O'Farrell*, 853 F.2d 894, 903 (Fed. Cir. 1988). Specifically, in circumstances where the prior art gives no indication of which parameters are critical or no direction as to which of many possible choices is likely to be successful, it is not "obvious to try" to vary all parameters or try each of numerous possible choices until one possibly arrives at a successful result. *See id.* Nothing in Wu et al. discloses or suggests the criticality of the monomeric and oligomeric alkoxyethyl melamine derivative composition ranges and the imino content of the claimed compositions, nor does Wu et al. provide any direction as to which of many possible choices is likely to provide the improved results achieved by the claimed invention. The only direction is found in the specification of the instant invention, and the use of Applicants invention in this manner is an improper use of hindsight reconstruction.

Dependent Claims 2 to 15 are submitted to be patentable over Wu et al. for the same reasons set forth above for Claim 1.

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As such, it is respectfully submitted that nothing in Wu et al. renders the invention, as claimed, obvious and reconsideration and withdrawal of the rejection of claims 1-16 under 35 U.S.C. 103(a) is respectfully requested.

It is respectfully requested in accordance with the amendment of claims and the discussion above, that the rejections of claims be reconsidered and claims 1-16 be found allowable.

Should the Examiner believe that issues remain outstanding, the Examiner is respectfully requested to call Applicants' undersigned attorney in an effort to resolve such issues and advance this application to issue.

Respectfully submitted,

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Marked-up Version of Amended Claims

1. (Once amended) A crosslinker composition consisting essentially of
  - a) 50 to 95 weight percent monomeric C<sub>1</sub> to C<sub>8</sub> alkoxyethyl melamine derivatives containing not more than about 0.20 wt. % of imino (>N-H) groups; and
  - b) 5 to 50 weight percent oligomeric C<sub>1</sub> to C<sub>8</sub> alkoxyethyl melamine derivatives, wherein
    - (i) when said composition comprises from 5 to 20 wt. % oligomer, said composition has an imino content of less than 0.20 wt. %;
    - (ii) when said composition comprises from 20 to 30 wt. % oligomer, said composition has an imino content, I, defined by the algorithm,  $I \leq 0.02X - 0.2$ , where X is the weight percent oligomer in the composition and I is expressed in weight percent imino; or
    - (iii) when said composition comprises from 30 to 50 wt. % oligomer, said composition has an imino content of less than 0.7 wt. %.[.]

16. (Once amended) A crosslinker composition comprising monomeric and oligomeric alkoxyethylated melamine, wherein monomeric alkoxyethylated melamine molecules have 6 moles of substituent groups attached to pendant nitrogen atoms per mole of monomeric melamine, wherein said substituent groups are selected from the group consisting of imino [>N-H], methylol [>N-CH<sub>2</sub>OH] , alkoxyethyl [>N-CH<sub>2</sub>OR] and acetal [>N-CH<sub>2</sub>OCH<sub>2</sub>OR]; and wherein difunctional bridging groups between melamine units in oligomeric alkoxyethylated melamine are selected from the group consisting of methylene groups [>N-CH<sub>2</sub>-N<] and methylene ether [>N-CH<sub>2</sub>OCH<sub>2</sub>-N<] groups; wherein:

- (a) monomeric alkoxyethylated melamine units comprise at least 50 and up to 95 percent by weight of the monomeric and oligomeric alkoxyethylated melamine units in the composition as determined by size exclusion chromatography,

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- (b) alkoxymethyl groups comprise at least 5.0 moles of substituent groups attached to pendant nitrogen atoms per mole of monomeric melamine, and
- (c) said alkoxymethyl groups on each melamine unit are methoxymethyl or mixtures of methyoxyethyl and higher alkoxymethyl groups; wherein
- (d) when said composition comprises from 5 to 20 wt. % oligomer, said composition has an imino content of less than 0.20 wt. %;
- (e) when said composition comprises from 20 to 30 wt. % oligomer, said composition has an imino content, I, defined by the algorithm,  $I \leq 0.02X - 0.2$ , where X is the weight percent oligomer in the composition and I is expressed in weight percent imino; or
- (f) when said composition comprises from 30 to 50 wt. % oligomer, said composition has an imino content of less than 0.7 wt. %.

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Marked-up Version of Amended Specification

(Once amended): Alkoxymethyl melamines comprising exclusively methoxymethyl melamine derivatives tend to be crystalline solids at room temperatures depending on purity. These solids can advantageously be solubilized, e.g. with lower alcohols such as [a] methanol, ethanol and propanol, to provide a liquid composition to facilitate formulations. In other cases solid methoxymethyl melamine derivative compositions can be dispersed into dry powder coating compositions or into liquid coating compositions using techniques well known to those skilled in the art.